

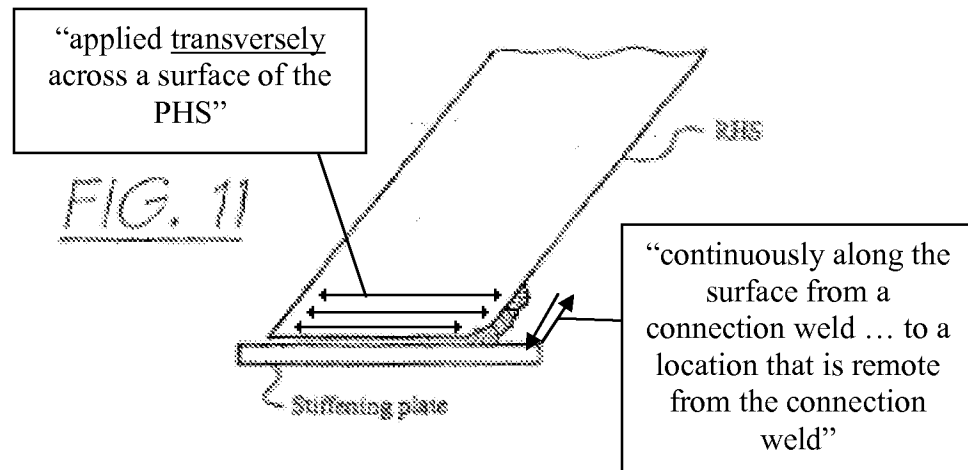
REMARKS

Pursuant to the phone conversation with the Examiner Gamino on August 26, 2009, Applicant provides this substitute response to provide additional and more detailed arguments distinguishing the claims from the cited prior art. For the Examiner's convenience, the Applicant asks the Examiner to consider this substitute response in place of the response submitted on August 13, 2009.

Further, in support of the arguments, Applicant asks the Examiner to consider the Declaration of Professor Gregory J. Hancock (hereinafter, the "Hancock Declaration"), under 37 C.F.R. 1.132 submitted herewith.

The Applicant again wishes to thank the Examiner for his analysis of the pending claims. Claims 1-4 and 6-21 are pending in the application. Claim 21 is new. Claim 5 is cancelled and claims 1-4 and 6-20 are amended. No new subject matter has been added with these amendments.

Claim 1 is directed to a method for welding a member and an end of a polygonal hollow section (PHS) to form a joint. As amended, the claim requires "forming a connection weld connecting the end of the PHS to the member." A second weld is formed "by applying a plurality of weld beads transversely across a surface of the PHS." Support for the transverse limitation can be found at, for example, page 6, lines 29-34. The claim also requires that the second weld extend "continuously along the surface [of the PHS] from a connection weld ... to a location that is remote from the connection weld such that, when a bending moment is applied to the joint, a greatest longitudinal normal strain occurs adjacent the remote location." Support for this limitation can be found in the application at, for example, page 25, lines 12-21. These limitations are added to further define the connection weld and the second weld, and to better distinguish the claim from the prior art. Figure 11 of the present application shows an example of the method of claim 1 (shown below).



Claims 2-4, 6, 7, 9-16, 19 and 20 have also been amended to more clearly define the Applicant’s invention and to better conform with U.S. practice. These amendments are not intended to be narrowing. Original claim 8 required either a backward bead deposit sequence or a forward bead deposit sequence. As amended, claim 8 now only defines a backward bead deposit sequence, while new claim 21 defines a forward bead deposit sequence. New claim 21 has support in original claim 8.

The Office Action rejects claims 1-8, 10-17, and 19-20 as either anticipated or obvious in view of the Tadateru reference. However, claim 1 is patentable over Tadateru because Tadateru does not disclose extending a weld “continuously along the surface [of the PHS] from the connection weld ... to a location that is remote from the connection weld such that, when a bending moment is applied to the joint, a greatest longitudinal normal strain occurs adjacent the remote location.” As explained in the specification and in Professor Hancock’s declaration, extending the weld continuously to a remote location on the PHS redistributes strain from the corners of the PHS to an adjacent flange.

Hancock Declaration, ¶ 7; *Specification*, page 25, lines 12-28. In one example, Table 1 on page 26 of the specification shows that with only a connection weld, the maximum strain in a welded connection is located at the corner of the PHS. However, with the addition of a second weld that extends 18 mm across the surface of the PHS, the strain at the corner is greatly reduced and the maximum strain occurs at the flange. As amended, claim 1 requires extending the second weld such that a greatest longitudinal normal strain occurs adjacent the remote location.

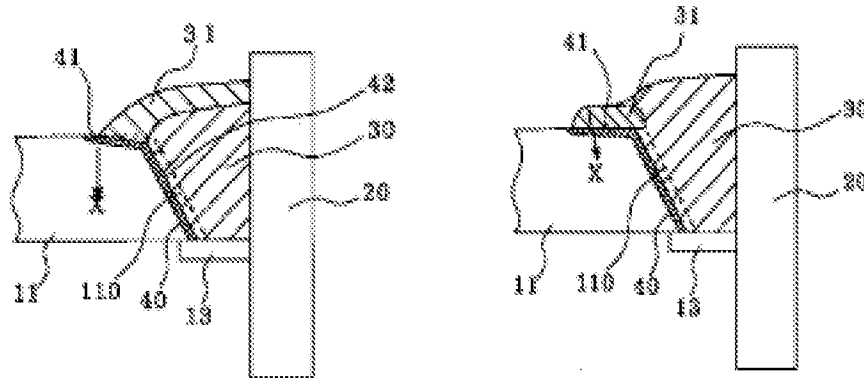
Whereas illustrative embodiments of the present invention are concerned with redistributing strain from the corners of the PHS to a remote location, the Tadateru reference is concerned with increasing the strength of the groove weld itself by applying a cosmetic weld. *Hancock Declaration*, ¶ 6. The weld bead (31) in the Figures of Tadateru is described in the document as a “cosmetic” infill weld. In other words, its purpose is to hide the connection weld 30. It is not a weld that is in any way applied to cause “a greatest longitudinal normal strain” to occur “adjacent the remote location.” As Professor Hancock explains in his declaration, Tadateru does not disclose strain movement away from the groove weld because the cosmetic weld does not sufficiently extend along the surface of the hollow member. *Hancock Declaration*, ¶ 8. Indeed, Tadateru explains that the cosmetic weld should extend no more than 15 mm beyond the groove weld, *Hancock Declaration*, ¶ 6:

Furthermore, the present invention is also characterized by a welded joint for structural members such welded joint characterized by being a welded joint between structural members at least one of which possesses a groove, and by possessing a cosmetic infill weld part that is formed by cosmetic infill welding in the range from the butt welded part of the groove part continuing to the end of the groove in the surface side of the member that possesses the groove in the axial direction of the material for a distance of not more than 15 mm ...

Tadateru Translation, pages 8-9 (emphasis added) (submitted in an information disclosure statement on August 13, 2009). Although the second weld defined by claim 1 may extend less than 15 mm across the surface of the PHS, Tadateru’s passage above highlights that his purpose is not to redistribute strain away from the corners of the PHS, but instead to strengthen the groove weld. More specifically, Tadateru’s purpose is to control the propagation of cracks in the heat affected zone next to the groove weld. *See Tadateru Translation, page 12 (Effects of the Invention).* Indeed, Tadateru does not disclose or even suggest extending a weld to a remote location such that “a greatest longitudinal normal strain occurs adjacent the remote location.” For this reason alone, claim 1 is distinguished from the Tadateru reference.

Additionally or alternatively, claim 1 is patentable over Tadateru because the reference does not disclose, suggest, or teach applying a plurality of weld beads

transversely across the surface of the PHS. As can be seen from the figures below, Tadateru shows cross sections of a weld.



These cross sections do not show or explain how the weld was created, but only shows the cross section of the resulting structure. Claim 1 requires applying a plurality of weld beads transversely across the surface of the PHS and such an application of weld beads is neither disclosed nor suggested by the figures in Tadateru. Furthermore, the translation of Tadateru does not disclose applying a plurality of weld beads transversely across the surface of the PHS. For this alternative reason, claim 1 is patentable over Tadateru.

The Linnert reference is asserted in combination with Tadateru against some dependent claims, but the Linnert reference also does not disclose applying weld beads transversely across the surface of the PHS or extending a weld to a remote location such that a greatest longitudinal normal strain occurs adjacent the remote location. Therefore, claim 1 is also patentable over the combination of Tadateru and Linnert.

Independent claims 17 and 18 also require “applying multiple weld beads transversely across a surface of the PHS” and therefore, these claims are patentable for the reasons stated above with reference to claim 1. All of the dependent claims are also allowable for similar reasons.

Claim 17 has also been amended to overcome the office action’s indefiniteness rejection. Claim 17 requires “applying multiple weld beads transversely across a surface of the PHS in a manner such that strain in at least one corner ... is redistributed to a flange that is adjacent to the at least one corner of the PHS.” This amendment clarifies that strain is distributed from at least one corner of the PHS to a flange that is adjacent to

the corner. To redistribute the strain, the claim requires applying multiple weld beads transversely across a surface of the PHS. Contrary to the office action, the claim need not specify whether the corners are welded or whether the corners are round or square. As amended, the claim is unambiguous. Furthermore, the office action's assumption that the weld "wraps around the corners adjacent to the flange and stops where the next flange begins" is inappropriate. The office action provides no basis for such an assumption.

All of the rejections have been addressed and the Applicant requests issuance of a notice of allowance. If any additional fees are required for the timely consideration of this response, please further charge deposit account number 19-4972.

Respectfully submitted,

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